American Water Works Association

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AMERICAN WATER WORKS ASSOCIATION
BEFORE THE
COMMITTEE ON GOVERNMENT REFORM
U. S. HOUSE OF REPRESENTATIVES

STATEMENT ON

THIRSTY FOR RESULTS
LESSONS LEARNED FROM THE DISTRICT OF COLUMBIA'S
LEAD CONTAMINATION EXPERIENCE

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PRESENTED BY
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INTRODUCTION

Good morning Mr. Chairman. I am Howard Neukrug, Director of the Office of Watersheds for the Philadelphia Water Department in Pennsylvania. The Philadelphia Water Department is a municipal water, wastewater and storm water utility serving over two million people in the Philadelphia metropolitan area. I serve as the Chair of the American Water Works Association (AWWA) Water Utility Council. I am here today on behalf of AWWA. AWWA and its members commend you for holding this hearing and appreciate the opportunity to present its views on lead contamination of drinking water.

Founded in 1881, AWWA is the world's largest and oldest scientific and educational association representing drinking water supply professionals. The association's 57,000 members are comprised of administrators, utility operators, professional engineers, contractors, manufacturers, scientists, professors and health professionals. The association's membership includes almost 4,800 utilities that provide over 80 percent of the nation's drinking water. AWWA and its members are dedicated to providing safe, reliable drinking water to the American people.

AWWA utility members are regulated under the Safe Drinking Water Act (SDWA) and other statutes. AWWA believes few environmental activities are more important to the health of this country than assuring the protection of water supply sources, and the treatment, distribution and consumption of a safe, healthful and adequate supply of drinking water.

Recently, there has been much interest in Congress about the elevated levels of lead found in drinking water in Washington, DC. Much of the discussion has centered on the lead service lines between the distribution system and the home plumbing, and whether or not they are a significant source of lead in drinking water. We cannot speak to the specifics of the situation in Washington, DC. The matter is still under investigation and AWWA has no direct knowledge of the cause of the elevated lead levels found in tests of drinking water in Washington, DC, or any remedial action that has been taken or should be taken in that instance. Nor does AWWA have any information that would suggest that the problem experienced in Washington, DC, is occurring in other public water systems across the country. We can, however, provide general information concerning the sources of lead in drinking water and what has been done and can be done to reduce exposure to lead in drinking water.

AWWA and its members have a long history of promoting measures and research to eliminate or reduce exposure to lead through drinking water. AWWA supported amendments to the SDWA to eliminate lead contamination in school drinking water and prohibit drinking water coolers that were not lead free. Through the Awwa Research Foundation (AwwaRF), public water supplies have spent approximately $3.4 million dollars on research projects related to lead and copper corrosion and plan to spend over $2.5 million on planned or ongoing research. A summary of the funding for AwwaRF projects related to the Lead and Copper Rule is attached to this statement.

AWWA and its members emphatically support lead exposure reduction measures that promote public health.

1. First and most importantly, we advocate a comprehensive national approach to reducing lead contamination from all sources. This should involve a program of research and public education concerning the sources of, dangers of, and protection against lead contamination from all sources such as paint, dust, drinking water, and others. It is important that the program not be limited to drinking water, since drinking water is not the major source of lead exposure.
2. We advocate the use of corrosion control treatment techniques by all utilities to reduce exposure to lead in drinking water.
3. We support replacement of lead service lines that significantly contribute to high lead levels in the home.
4. We advocate a "holistic" approach to the development and implementation of drinking water regulations to minimize the extent to which regulations can interfere with each other.
5. We propose an independent study of the drinking water lead contamination incident in Washington, DC, by a group such as the National Academy of Engineering, to determine what caused this incident and what lessons may be learned from this.

BACKGROUND

Lead is a naturally occurring metal that was used regularly in a number of industrial capacities for most of the 20th century. Lead was used as a component of paint, piping (including water service lines), solder, brass, and as a gasoline additive until the 1980's. According to the U.S. Environmental Protection Agency (USEPA), lead paint and the contaminated dust and soil it generates is the leading household source of lead exposure. Research has confirmed that lead is highly toxic. Ingestion of lead can pose a serious health risk to humans, especially children. Health risks linked to lead ingestion include increased blood pressure, reduced I.Q. levels, brain damage, loss of hearing, stunted physical growth, reduced learning power, premature births, low birth-weight, fertility problems, and miscarriages. Since 1974, average lead concentration in human blood has been reduced almost 75 percent, primarily as the result of removal of lead from gasoline and lead solder from cans.

Lead contamination almost always occurs ***after*** water has left the treatment plant when it travels through piping and plumbing containing lead. Water is naturally corrosive, and in some cases will corrode the pipes and plumbing through which it passes. This corrosion can occur in home fixtures as well. If these fixtures are made of materials, like brass, which contain lead, the fixtures can add dissolved lead to the drinking water. Brass fixtures and lead-based solder used in home plumbing prior to 1986 are significant sources of lead exposure in drinking water. Grounding of electrical circuits in homes to water pipes and galvanic action between two dissimilar metals may increase corrosion that could cause lead to leach into the water. Customers who soften their water or otherwise change its corrosivity can affect the lead content of the water.

In 1986, Congress passed amendments to the Safe Drinking Water Act, effectively banning the continued use of lead in materials used in drinking water systems. This legislation prohibited the use of pipe, solder or flux containing lead and required specific public notification about the presence of lead in its drinking water or drinking water system.

In 1991, USEPA published the Lead and Copper Rule (LCR), to require water utilities to reduce and maintain the corrosivity of water in order to minimize the leaching of lead from pipes and plumbing into drinking water. The LCR requires public water systems to monitor first flush lead levels in a predetermined number of homes based on system size. The homes where monitoring is to occur are selected based on the high likelihood that they will have lead service lines or plumbing that contains solder with high concentrations of lead. Based on data from this monitoring pool of homes, a public water system must meet a 15 parts per billion (ppb) action level at the 90th percentile for taps monitored. Based on the initial monitoring and analysis under the revised LCR, public water systems determined the needed process to maintain "optimal corrosion control." The primacy agency reviewed and approved the proposed control strategies and must approve subsequent changes.

If a public water system exceeds the 15ppb action level, it is required to develop and undertake a lead service line replacement program. The LCR requires that a system replace 7 percent of the lead service lines which the system owns each year until all such lines have been replaced, or until tap water monitoring indicates that its 90th percentile lead level is equal to or less than 15ppb action level.

As part of a corrosion control strategy, many public water systems add a corrosion inhibitor such as zinc orthophosphate to the water. While this is often effective as a means of corrosion control, it does increase the phosphate content in wastewater in that community. Phosphate is a limiting nutrient in many surface waters to which wastewater is discharged and is regulated under the Clean Water Act because of its high potential to contribute to the eutrophication of our lakes and rivers.

AWWA RECOMMENDATIONS

1. **NATIONAL LEAD REDUCTION STRATEGY.**

AWWA advocates a comprehensive approach to reducing lead contamination from all sources. We believe that Congress should require a respected body such as the Centers for Disease Control to complete a comprehensive study of lead exposure from all sources, and to develop a national strategy to reduce lead exposure from all significant sources. Such research should include a determination of the contribution to lead in drinking water from lead service lines, pipes inside the home, and plumbing fixtures.

In addition, AWWA proposes a priority national public education campaign aimed at measures and steps people can take to protect themselves from significant sources of lead contamination. AWWA believes that a national coordinated campaign involving all concerned federal agencies and state and local governments will provide significant public health benefits.

AWWA also strongly advocates a continuing public education program concerning all sources hazards of lead exposure and effective protective measures. Public education is a key component of a lead exposure reduction strategy. Water suppliers, working in cooperation with local and state public health officials and others, can help deliver the needed messages on the dangers of lead and the part everyone has to play in reducing risks. Since most lead contamination occurs inside the home from paint chips and dust or comes from home plumbing, increased public awareness is especially important.

In the mid-1980's AWWA launched the "Get the Lead Out" campaign to raise the level of lead contamination awareness among consumers. We created informational material for utilities to give their customers. We now have consumer information about lead contamination in drinking water on the AWWA website. Concerned consumers can take several precautionary steps to limit possible exposure to lead from their home plumbing. Flushing the tap if a faucet has gone unused for more than a few hours and not using water from the hot water tap for cooking or drinking are simple methods to avoid high lead levels. The longer water stands in a faucet, the more lead can be dissolved and hot water dissolves lead at a faster rate than cold water. AWWA recommends that concerned consumers have their water tested by a State-certified laboratory to determine if lead is leaching into their drinking water from their home plumbing. Consumers should be advised of these precautions even if the water system results from lead testing do not exceed the USEPA "action level" of 15 ppb in more than ten percent of homes tested. Although it is not a specific requirement in the LCR, a water utility should notify a customer of the results of lead testing of the consumer's tap.

2. **OPTIMIZATION OF CORROSION CONTROL.**

AWWA advocates the treatment technique of optimizing corrosion control as the best way of reducing exposure from lead in drinking water. Determining the corrosivity of water is complex and depended on several characteristics of the water. Lead contamination of drinking water is primarily the result of lead in home plumbing and fixtures beyond the control of a drinking water utility. The means available to drinking water systems to mitigate the degradation of water passing through pipes and fixtures in home plumbing is through implementation or modification of the corrosion control process. This can be done by adjusting the finished water's pH and alkalinity or by adding corrosion inhibitors.

If source water were the only way lead could enter drinking water, establishing a maximum contaminant level (MCL) for a utility to meet at the plant or in the distribution system would be sufficient to protect public health as it is for the majority of regulated contaminants. If lead were to occur in source waters, it could be removed in the treatment process. Public water systems are clearly responsible for and can control water quality at treatment facilities. However, the major source of lead in drinking water is not source water. It is lead from plumbing systems and faucets in homes that are beyond the control of drinking water utilities. The contribution of lead service lines to lead contamination is uncertain.

Some have suggested establishing an MCL for lead at the end user's tap. This would have the effect of holding water suppliers legally responsible not only for lead sources that they cannot control but also the mistakes, omissions, and even illegal activities of others. There is still lead solder in home plumbing although it was banned in 1986. Studies have shown that brass faucets holding lead free water for an eight hour period can leach lead into water at levels of 10 ppb and higher. Grounding of electrical circuits in homes to water pipes and galvanic action between two dissimilar metals may increase corrosion that could cause lead to leach into the water. Customers who soften their water or otherwise change its corrosivity can affect the lead content of the water. These types of problems cannot be solved by an MCL at the tap or in the public water system. Each of these by themselves or in combination can cause lead to leach into drinking water. The SDWA limits EPA authority to regulating public water systems. A tap within a residence is not and should not be considered to be part of a public water system.

The SDWA also specifically prohibits USEPA from imposing both an MCL and a treatment technique for the same contaminant. Therefore AWWA advocates a lead control strategy of optimizing corrosion control in conjunction with public education and a lead service line replacement program as the best method to protect public health.

3. **REPLACEMENT OF LEAD SERVICE LINES.**

AWWA advocates lead service line removal as a means of reducing lead contamination in drinking water when the lead service line is significantly contributing to lead contamination. However, lead service line replacement is complicated by the ownership of the lead service lines. In some instances, the water utility owns the entire line. In others, the property owner owns the entire service line. And in still other cases, part of the lead service line is owned by the utility and part by the property owner. A public water system can only be held legally liable for replacing the service line or part of the service line owned by the utility. A public water system has no legal means to compel a property owner to replace a lead service line or portion of a lead service line. Requiring a water utility to remove privately owned lead service lines raises constitutional legal issues with regard to private property and eminent domain. All agree that partial replacement of a lead service increases lead levels in water and should be avoided. Further, removing a lead service line may not reduce lead contamination of drinking water. Tests have revealed high lead levels in homes that have no lead service line and low to no measurable lead contamination in homes with lead service lines. Removing lead service lines alone is not the complete solution to reducing lead exposure from drinking water. Because of the costs involved and the likelihood there will be little or no public health benefit in some cases, lead service removal programs should focus on removing lead service lines owned by a utility that are significantly contributing to lead contamination as a high priority.

When the LCR was promulgated in 1991, USEPA estimated that it would cost $1.5 - 6.25 billion nationally ($2.1 - $8.65 billion in 2003 dollars) to remove lead service lines. The LCR estimate is for replacement that will occur as a result of the rule. The USEPA estimate is based on the assumption that 8,300 of the 15,000 systems with lead service lines will be required to replace some lead service lines at a per service line costs of $900 - $1,800. A later study conducted by the AWWA Research Foundation in 1994 estimated that there was a total of some 2.3 to 5.1 million lead service lines in the nation. Removal of the utility owned portion of the lead service line would cost $3.4 to $5.1 billion nationally ($4.2 - $6.3 billion in 2003 dollars). Replacement of all lead service lines, including the portions owned by property owners and by utilities, would cost approximately $10-$14.1 billion nationally ($12.3 -$17.5 in 2003 dollars).

Some property owners may be unable to afford the cost and local or state restrictions may prevent a public water system from paying for or financing the lead service line removal. A public water system has access to the Drinking Water State Revolving Fund (DWSRF) to fund removing lead service lines that it owns. A property owner may not have such easy access to fund lead service line replacement. In 1991, AWWA recommended in testimony that Congress consider enacting a tax credit for property owners who must pay for the removal of lead service lines. We still believe this is a good idea that is in the interests of public health in this country.

The cost to consumers of removing lead service lines is in addition to the cost of replacing aging drinking water infrastructure. In September 2002, the USEPA released a Clean Water and Drinking Water Infrastructure Gap Analysis which found that there will be a $535 billion gap between current spending and projected needs for water and wastewater infrastructure over the next 20 years. In May 2002, the Congressional Budget Office estimated the spending gap for drinking water needs between $70 billion and $362 billion over 20 years. In AWWA's report entitled Dawn of the Replacement Era: Reinvesting in Drinking Water Infrastructure, AWWA estimates the drinking water infrastructure needs to be $250-300 billion over the next 30 years. By any estimate, the gap is real and is big. All estimates suggest an emerging large cost for drinking water infrastructure. As illustrated in the AWWA report, the "demographics" of pipe replacement is big and the bill is coming due soon. This challenge is exacerbated by population shifts and growth patterns over the years that have left stranded assets in many older cities, as well as today's economic conditions and the changed demographics and economic levels of urban populations.

Funding for drinking water infrastructure is further exacerbated by the enormously expensive federal mandates that wastewater utilities face, such as costs relating to Combined Sewer Overflows (CSO) and Sanitary Sewer Overflows (SSO), that set the context for all other funding issues. These needs significantly skew financing for other infrastructure investments in both water and wastewater utilities such as the replacement of aging pipes, appurtenances, and lead service lines. Local ratepayers are often seriously challenged to pay for these mandates, and little, if any, room is left in the ratepayer's budget for other vital spending. In many cases, it appears that mandatory spending for clean water mandates has "driven out" the ability to raise rates for drinking water needs. There is a limit to the costs that individual consumers can bear.

As if these challenges weren't enough, the post-September 11 world added a new dimension to water infrastructure in the form of investment needed to protect the security of the nation's infrastructure. A public water system is a critical infrastructure that not only is necessary to provide safe drinking water to the American people but also is critical to first responders for fire protection. Cognizant of the many security needs facing drinking water utilities, AWWA did an analysis to estimate the costs to undertake the immediate steps in water system security: The cost of upgrading systems to ensure secure control of access to critical utility assets in community water systems subject to the Bioterrorism Act is approximately $1.6 billion. This does not include the capital costs of upgrades to address vulnerabilities identified in vulnerability assessments such as hardening pumping stations, chemical storage buildings, transmission mains, adding redundant infrastructure or relocating facilities and pipelines. Thousands of community water

systems must make such investments to close vulnerabilities identified in the assessments done under the Bioterrorism Act. Nationwide, these needs undoubtedly total billions of dollars, and can be considered the cost of a secure water supply. Because homeland security is primarily a federal responsibility and the security needs are so large that they would swamp utility finances and funds through existing programs, AWWA has asked Congress to provide water security improvement grants. However, because federal funding for security upgrades is not now available, consumers will have to pay for the immediate security upgrade needs for drinking water systems.

These many and expensive infrastructure costs to the consumer present a complicated challenge to local governments in their efforts to remove lead service lines.

4. HOLISTIC APPROACH TO DRINKING WATER REGULATIONS.

AWWA advocates a holistic approach to drinking water regulations that considers simultaneous compliance with existing drinking water regulations and other environmental regulations. The recent experience in Washington, DC, with lead contamination is one example of the pitfalls of the "silo" approach to drinking water regulation. By "silo" we mean developing a rule in isolation and not completely understanding its connectivity to other regulations. Without having all of the data necessary for a complete technical analysis, it appears that treatment changes (enhanced coagulation and switching to chloramines) the utility instituted to comply with the Stage 1 Disinfectants and Disinfection By-Products Rule (DBPR) may have contributed to the increased levels of lead in the district's drinking water.

Potential problems with the Lead and Copper Rule (LCR) stemming from treatment changes made to comply with the Stage 1 DBPR were not unknown at the time that regulation was finalized. In AWWA's comments on the Notice of Data Availability (NODA) for the Stage 1 DBPR in 1998, and again in our comments on the proposed LCR technical corrections in 1998, AWWA recommended that the enhanced coagulation requirements for Stage 1 DBPR include greater flexibility for states and utilities in determining the most appropriate treatment approach for simultaneous control of organics, disinfection by-products, and corrosion.

USEPA expects to finalize the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) and the Stage 2 Disinfectants and Disinfection Byproducts Rule (DBPR) in early 2005. These rules specify a range of treatment and management strategies to reduce disease associated with *Cryptosporidium* and other pathogenic microorganisms while at the same time avoiding dangerous levels of disinfectant byproducts. Many more utilities will switch to chloramines or make other major treatment changes to comply with the Stage 2 DBPR. The effect of these rules on compliance with the LCR was not a consideration in their development.

Furthermore, the recently released study by USEPA's Office of Research and Development (ORD), *The Occurrence of Disinfection By-Products (DBPs) of Health Concern In Drinking Water: Results of a Nationwide DBP Occurrence Study*, found alternative treatment methods, such as chloramine and ozone, create as many as 50 new, and possibly more risky, DBPs. Little health effects information is available on these new DBPS. In both Stage 1 DBPR and Stage 2 DBPR, there has been a consistent and progressive shift to alternative disinfectants for compliance. Unfortunately, this new research now suggests that there may well be significant, and as yet unquantified, undesirable health risks associated with this shift to alternative disinfectants.

The arsenic regulation provides another example of the "silo" approach to drinking water regulation. California has a more stringent classification of hazardous waste than the rest of the nation. This classification system was in place during the development of the arsenic regulation. AWWA and many California utilities, in formal comments on the proposed rule, advised USEPA that this regulation was going to result in the production of tons of hazardous waste in California. USEPA's approach to the hazardous waste issue was that this classification system was California's problem and this issue didn't need to be addressed in the national regulation. As a result, the costs to dispose of the hazardous waste from the California utilities were not included in the estimated national cost of compliance. Now, based on the latest research, treatments to remove arsenic generate both solid and liquid hazardous wastes, and the estimated costs to properly dispose of these wastes from California utilities alone, are equivalent to EPA's estimated national cost of compliance.

Section 1412 (b)(5) of the SDWA states that rule writers must consider risk tradeoffs in setting an MCL. In particular, they must consider risk tradeoffs if the levels of other contaminants are raised or they interfere with the efficacy of treatment techniques or processes that are used to comply with other regulations. Consequently, AWWA believes that the agency should adequately consider negative consequences of regulatory actions, particularly with respect to potential human health impacts. This issue is particularly acute when regulations are driven by potential or poorly understood risks, such as DBP regulations.

AWWA urges USEPA to appropriately consider simultaneous compliance with existing drinking water regulations when a new drinking water regulation is finalized. Additionally, USEPA should appropriately account for the impacts from existing environmental regulations when it finalizes a new national drinking water regulation. We believe that a holistic approach to drinking water regulations will provide better public health protection.

5. **INDEPENDENT STUDY OF D.C. LEAD PROBLEMS AND LEGISLATIVE AND REGULATORY CHANGES.**

AWWA advocates an independent study of the drinking water lead contamination incident in Washington, DC, to evaluate what if any changes may need to be made in the law or regulation. Delegate Norton is to be commended for introducing H.R. 4268, the Lead-Free Drinking Water Act of 2004. AWWA supports the purpose of the bill to improve protection of public health by reducing exposure to lead contamination in drinking water. However, AWWA believes that the bill is pre-mature because no one knows for sure what caused the elevated lead levels in the District of Columbia water system. At this time, it is difficult to determine if H.R. 4268 could have prevented the current high levels of lead in the District of Columbia water system. Solutions proposed in the bill could be addressing issues that were not the cause of the high lead levels and miss entirely the actual cause that needs to be corrected. For instance, why were lead levels high in some homes without lead service lines and low in some homes with lead service lines? Why did the lead levels vary so widely for the same tap tested at different intervals? This would lead one to believe that other factors were the cause of or involved in the high lead levels. There is no reason, at this time, to believe that the high lead level problem in the District of Columbia is a nationwide problem that would require changes to the (SDWA. AWWA believes that the current SDWA requirements protect public health and USEPA currently is engaged in an extensive national review of the Lead and Copper Rule implementation to identify how well the rule is performing across the nation and what gaps exist in federal guidance and regulation. Last week, USEPA convened a panel of experts in St. Louis, Missouri, to address the issues involved in complying with the Lead and Copper Rule and will publish the results. AWWA supports these efforts by USEPA. The Lead and Copper Rule should not be revised until this review is completed.

Many of the reforms suggested in H.R. 4268 can be accomplished in the regulatory process rather than by statute. AWWA has concerns about mandating scientific and technological regulatory procedures in legislation. Scientific knowledge and technology change – sometimes very rapidly. When these become imbedded in statute it becomes very difficult to deal with situations as scientific knowledge advances. The Lead and Copper Rule is not perfect and AWWA can support changes to make it a better and more effective regulation in some areas. However, we recommend that the regulatory changes proposed in H.R. 4268 be addressed in the regulatory process.

AWWA recommends that Congress direct an independent study of the high lead levels in the District of Columbia water system be conducted. This could be done very soon in an appropriations bill.

CONCLUSION

AWWA and its members thank you for holding this hearing concerning lead contamination of drinking water. AWWA pledges to work with the Congress and the US Environmental Protection Agency to address this important issue. We thank you for your consideration of our views.

This concludes the AWWA statement on lead contamination in drinking water. I would be pleased to answer any questions or provide additional material for the subcommittee.